

Amendment and Response under 37 C.F.R. 1.116

Applicant: Andrew Harvey Barr et al.

Serial No.: 10/621,661

Filed: February 22, 2006

Docket No.: 200308575-1

Title: PARTIALLY VOIDED ANTI-PADS

REMARKS

The following remarks are made in response to the Final Office Action mailed February 22, 2006. Claims 1-6 and 9-37 were rejected. Claims 1-6 and 9-37 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 102

The Examiner rejected claims 1-6, 9-12, 15, 17-22, 24-27, 30, and 32-34 under 35 U.S.C. § 102(e) as being anticipated by the Albinsson U.S. Patent No. 6,501,181.

Applicants submit that the Albinsson patent fails to teach or suggest the invention of independent claims 1, 17, and 24. Independent claim 1 recites a via transecting the conductive layer and an anti-pad around the via, the anti-pad comprising a pattern of conductive material having a plurality of voids. Independent claim 17 recites a via signal barrel transecting the conductive plane, and an anti-pad between the conductive plane and the via signal barrel, the anti-pad having a pattern of conductive material, wherein a signal can not be transmitted between the conductive plane and the via signal barrel. Independent claim 24 recites forming a via signal barrel transecting the conductive plane and forming a partially voided anti-pad between the conductive plane and the via signal barrel.

The Albinsson patent discloses a compensating arrangement for a transition between two transmission lines. The transmission line involves a planar signal conductor 401, to which a signal via conductor 405 is connected. A compensating planar conductor 404 is printed on the same substrate as and close to the planar ground conductor 402. The compensating planar conductor 404 is printed in the vicinity of the area where the signal via 405 intersects the plane in which the planar ground conductor 402 and the compensating planar conductor 404 extend. The planar ground conductor 402 and the compensating planar conductor 404 are non-intersecting, there is a minimum distance between their edges which is larger than zero, but smaller than the diameter of a via hole. (Col. 6, lines 4-19).

The Examiner submits that planar ground conductor 402 of Figure 4b of the Albinsson patent discloses the conductive layer of independent claims 1, 17, and 24. The Examiner also submits that via 405 of Figure 4b discloses the via transecting the conductor. (Office Action, page 2). Via 405, however, does not transect planar ground conductor 402

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but rather is connected to signal conductor 401. (Col. 6, lines 6-8). Therefore, the Albinsson patent fails to disclose a via transecting the conductive layer as recited in claim 1, a via signal barrel transecting a conductive plane as recited in claim 17, and forming a via signal barrel transecting the conductive plane as recited in independent claim 24.

The Examiner also submits that the anti-pad of claims 1, 17, and 24 is disclosed by compensating planar conductor 404. (Office Action, page 2). Compensating planar conductor 404 is not an anti-pad. An anti-pad is defined in the specification as: "[w]hen vias pass through a power or ground plane, the conducting material around the via on the power or ground plane is removed to prevent a short between the via and the power or ground plane. The area that is removed creates a void called an anti-pad." (Specification at page 1, lines 13-16). "Anti-pads are employed to create a void between the via and the conductive plane to prevent shorts between the vias and conductive planes through which vias may pass." (Specification at page 4, lines 13-15). In contrast, compensating planar conductor 404 does not create a void between via 405 and the planar signal conductor 401, which it transects, since via 405 is electrically coupled to the planar signal conductor 401. Therefore, compensating planar conductor 404 cannot be considered an anti-pad.

In view of the above, Applicants respectfully submit that independent claims 1, 17, and 24 are not taught or suggested by the Albinsson patent. Dependent claims 2-6, 9-12, 15, 18-22, 25-27, 30, and 32-34 further define patentably distinct claim 1, 17, or 24. Accordingly, these dependent claims are also believed to be allowable over the Albinsson patent. Applicants respectfully request that the rejection of claims 1-6, 9-12, 15, 17-22, 24-27, 30, and 32-34 under 35 U.S.C. § 102(e) be withdrawn and that claims 1-6, 9-12, 15, 17-22, 24-27, 30, and 32-34 be allowed.

The Examiner rejected claims 35-37 under 35 U.S.C. § 102(e) as being anticipated by the Oggioni et al. U.S. Patent No. 6,710,258.

Applicants submit that the Oggioni patent fails to teach or suggest the invention of independent claims 35-37. Independent claim 35 recites wherein the pattern comprises an asymmetric pattern.

The Oggioni patent discloses that it is not necessary that the rings are completely closed around the via-hole and that the rings may be comprised of square or other polygonal

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shaped frames rather than cylindrical. (Col. 6, lines 6-9). The Oggioni patent also discloses that the arrangement of the via-hole at the center of the rings ensures that no asymmetry is introduced. (Col. 5, lines 49-51). The Oggioni patent teaches away from asymmetry and does not teach or suggest a pattern that comprises an asymmetric pattern. In the Response to Arguments, the Examiner states that a "break in the ring would indeed teach and suggest a pattern that is asymmetric." (Office Action, page 8). While the Oggioni patent specifically states that the rings do not have to be completely closed around the via hole, that does not mean that asymmetry would be introduced by including openings around the rings. The openings could be placed such that the rings are symmetric and the Oggioni patent teaches that the pattern should be symmetric.

In view of the above, Applicants respectfully submit that claim 35 is not taught or suggested by the Oggioni patent. Applicants respectfully request that the rejection of claim 35 under 35 U.S.C. § 102(e) be withdrawn and that claim 35 be allowed.

Independent claim 36 recites an anti-pad around the via, the anti-pad comprising a pattern of conductive material having a plurality of voids, wherein the pattern comprises a concentric circles pattern. While the Oggioni patent discloses single rings, the Oggioni patent is silent with regard to the pattern comprising a concentric circles pattern. In the Response to Arguments, the Examiner states that "the pattern of material and voids includes the conductive circular ring and the concentric circular voids as well." (Office Action, page 8). The pattern that comprises concentric circles, however, is formed of conductive material and does not include the voids. Therefore, the Oggioni patent does not disclose a concentric circles pattern.

In view of the above, Applicants respectfully submit that independent claim 36 is not taught or suggested by the Oggioni patent. Applicants respectfully request that the rejection of claim 36 under 35 U.S.C. § 102(e) be withdrawn and that claim 36 be allowed.

Independent claim 37 recites wherein the pattern comprises a screen pattern. In the Response to Arguments, the Examiner states that "neither Applicants nor Oggioni have provided any special meaning to the words 'screen' and 'mesh.' Therefore, the Examiner is required to give the words their plain meaning. In plain usage, the words 'screen' and 'mesh' are interchangeable. Thus, since the Oggioni patent explicitly discloses a 'mesh' it is clear

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that the Oggioni patent discloses a screen pattern.” (Office Action, page 8). While the Oggioni patent uses the term “mesh” to describe the shielding structure, it is clear that the use of the term is not referring to a screen pattern. The Oggioni patent is silent with respect to the pattern comprising a screen pattern.

The Oggioni patent discloses that the circuitized substrate further includes, for each via-hole, one or more shielding tracks connectable to a reference voltage. Each shielding track is formed in a corresponding intermediate conductive layer and substantially surrounds the via-hole. The device solution thus provides a mesh shielding of the via-hole, which acts as a coaxial structure. (Col. 5, lines 28-34). Preferably, the rings are formed in each inner conductive layer, so that these rings are as close as possible to each other. This results in a very low pitch of the mesh structure around the via-hole, which provides a good shielding for signals with a very high frequency. (Col. 5, lines 51-57). The text of the Oggioni patent does not disclose anti-pads having a screen pattern, but rather describes the shielding structure as a mesh.

In view of the above, Applicants respectfully submit that independent claim 37 is not taught or suggested by the Oggioni patent. Applicants respectfully request that the rejection of claim 37 under 35 U.S.C. § 102(e) be withdrawn and that claim 37 be allowed.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claims 13, 14, 16, and 31 under 35 U.S.C. § 103(a) as being unpatentable over the Albinsson patent.

Dependent claims 13, 14, 16, and 31 further define patentably distinct independent claim 1 or 24. Accordingly, these dependent claims are also believed to be allowable over the cited references.

Further, the Examiner has taken official notice that it is well-known in the art to comprise conductor patterns in each of these shapes. Applicants contend that these are not well-known facts that are capable of instant and unquestionable demonstration as being well-known. Applicants respectfully request allowance of these claims, pursuant to MPEP § 2144.03 that the Examiner cite a reference to teach these limitations or alternatively.

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In view of the above, Applicants respectfully request that the rejection of claims 13, 14, 16, and 31 under 35 U.S.C. § 103(a) be withdrawn and that claims 13, 14, 16, and 31 be allowed.

The Examiner rejected claim 23 under 35 U.S.C. § 103(a) as being unpatentable over the Albinsson patent in view of the Oggioni patent.

Dependent claim 23 further defines patentably distinct independent claim 17. Accordingly, this dependent claim is also believed to be allowable over the cited references. Applicants respectfully request that the rejection of claim 23 under 35 U.S.C. § 103(a) be withdrawn and that claim 23 be allowed.

The Examiner rejected claims 28 and 29 under 35 U.S.C. § 103(a) as being unpatentable over the Albinsson patent in view of the Murray et al. U.S. Patent No. 5,844,146.

Dependent claims 28 and 29 further define patentably distinct independent claim 24. Accordingly, these dependent claims are also believed to be allowable over the cited references. Applicants respectfully request that the rejection of claims 28 and 29 under 35 U.S.C. § 103(a) be withdrawn and that claims 28 and 29 be allowed.

CONCLUSION

In view of the above, Applicants respectfully submit that pending claims 1-6 and 9-37 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-6 and 9-37 is respectfully requested.

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No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Patrick G. Billig at Telephone No. (612) 573-2003, Facsimile No. (612) 573-2005 or David Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via facsimile to Facsimile No. (571) 273-8300 on this 9 day of June, 2006.

By: 

Name: Patrick G. Billig